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Grading Permit No. 4689

SUMMARY OF FIELD DENSITY TEST RESULTS
EMBANKMENT FILL

ACCESS ROAD
KAHUKU LANDS DEVELOPMENT
KAHUKU, OAHU, HAWAII

FOR

INSCON DEVELOPMENT COMPANY

T.M.K. - ~~4~~ 5-7-01:1

WITHDRAWN

Dames & Moore Job No. 7577-011



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January 3, 1972

Del E. Webb Corporation
Post Office Box 27
Kahuku, Oahu, Hawaii 96731

Attention: Mr. M.D. Stevens

Gentlemen:

Summary of Field Density Test Results
Embankment Fill
Access Road
Kahuku Lands Development
Kahuku, Oahu, Hawaii

This letter summarizes the results of field density tests performed during construction of embankment fills for the Access Road at your Kahuku Lands Development project. The location at which each density was performed is presented on the Location of Field Density Test Plan, Attachment 1. The Summary of Density Tests is presented on Attachment 2.

Our inspection services were provided on an "on-call" basis from Del E. Webb Corporation. However, we were requested to be at the site on a continuous basis throughout the majority of the embankment construction. Placement of fill material was initiated by the earthwork contractor, J.A. Thompson & Son, Inc., in August, 1970. During construction of the roadway embankment, soft compressible subgrade soils were encountered in the area between station 11+00 and station 17+00. Recommendations regarding preparation of the subgrade in this area prior to placement of the embankment fill were presented in our letter dated August 19, 1970. The earthwork contractor generally conformed to these recommendations during embankment construction in this aforementioned area.

Based upon results of our inspection, it is our opinion that the embankment fill of the Access Road has been placed in accordance with the specifications governing its construction.

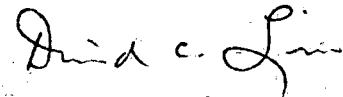
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Del E. Webb Corporation
January 3, 1972
- page 2 -

It has been a pleasure being of service to you on this project. Should you have any questions regarding the contents of this letter, please contact us.

Yours very truly,

DAMES & MOORE



David C. Liu

DCL WDW mw

Attachment 1, Location of Field Density Test Plan
Attachment 2, Summary of Density Tests

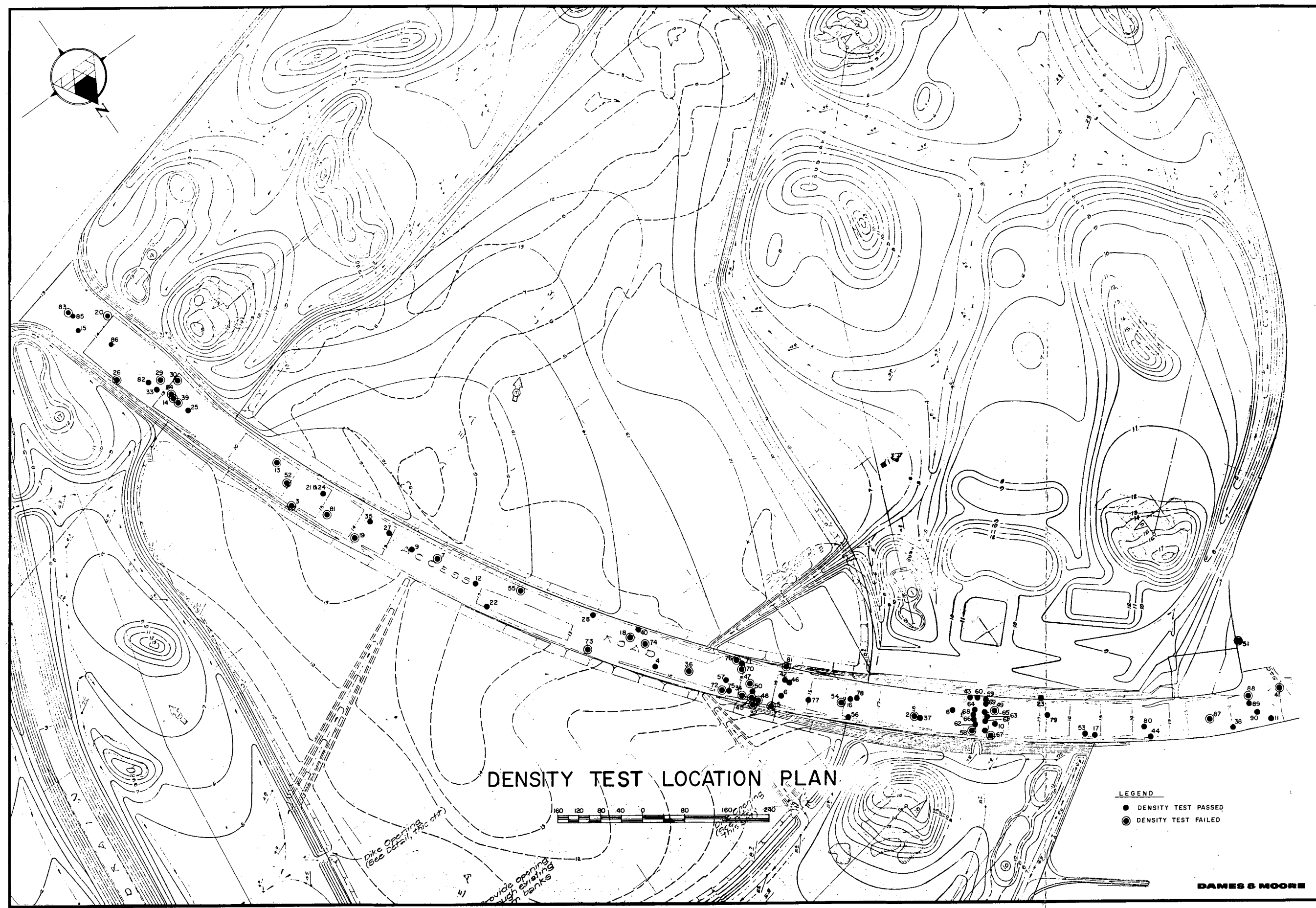
(six copies submitted)

cc: Del E. Webb Corporation
Attention: Mr. Fred P. Kuentz
Mr. B. Armstrong
Inscor Development Company
Attention: Mr. J.S. Aubin
Sunn, Low, Tom & Hara, Inc.
Attention: Mr. Paul Low

REVISIONS
BY: _____ DATE: _____
BY: _____ DATE: _____
BY: _____ DATE: _____

FILE: 1977-011
BY: JAU DATE: 12-9-77
CHECKED BY: _____ DATE: _____

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DAMES & MOORE

ATTACHMENT I

SUMMARY OF DENSITY TESTS
CONTROL OF COMPACTED FILL

JOB NO. 7577-011

OWNER INSCON DEVELOP. CO.

PAGE 1 of 4

JOB ENGR. WDW

TEST NO.	DATE 1970	TEST LOCATION ACCESS ROAD STATIONING	ELEV FT.	% COMP. REQ'D	MAX. DRY DENSITY P.C.F.	FILL MOISTURE %	TEST DRY DENSITY P.C.F.	% MAX. DRY DENSITY	REMARKS
1	8-19	20 + 50 - R30	3.5	90	83½	58.5	67	80	FAILED
2	8-20	19 + 05 - R12	3.5	90	83½	52.5	72	86	RETEST 1 FAILED
3	"	06 + 59 - R39	4.1	90	100	31.4	86½	86½	ORIGINAL GRND. FAILED
4	"	14 + 00 - R21	3.0	90	100	30.6	91	91	ORIGINAL GRND.
5	"	16 + 35 - R36	0.5	90	83½	59.0	67½	81	RETEST 2 FAILED
6	8-22	16 + 50 - R10	0.7	90	83½	40.8	80	95½	RETEST 5
7	8-25	09 + 50 - L12	4.6	90	83½	40.4	70½	84½	FAILED
8	8-26	19 + 73 - L08	7.3	90	83½	35.2	75½	90½	
9	"	08 + 97 - L04	4.0	90	89	33.5	82	92½	RETEST 7
10	8-27	20 + 63 - R08	11.0	90	83½	41.0	75	90	
11	"	25 + 74 - R28	8.8	90	83½	44.3	75½	90	
12	8-28	10 + 33 - L03	7.0	90	89	26.4	86½	97	
13	"	05 + 95 - L15	7.6	90	83½	44.8	71	85	FAILED
14	8-29	03 + 35 - C	10.8	90	83½	55.5	72	86	RETEST 13 FAILED
15	8-31	01 + 45 - R18	10.8	90	92½	42.0	84	91	RETEST 14
16	"	17 + 78 - L06	5.2	90	100	22.8	93	93	
17	"	22 + 44 - R26	8.5	90	89	37.3	82	92	
18	9-1	13 + 38 - L15	8.0	90	83½	53.5	67	80½	FAILED
19	"	07 + 94 - R27	8.8	90	83½	48.4	70½	84	FAILED
20	"	01 + 75 - L39	12.4	95	83½	41.5	71	85	FAILED
21	9-2	07 + 00 - L15	8.7	90	83½	44.8	78	93½	RETEST 19 & 20
22	"	10 + 70 - R37	8.5	90	84	39.4	78½	93½	RETEST 18
23	"	21 + 35 - L45	14.0	90	89	36.8	82½	93	
24	9-4	07 + 00 - L15	11.2	90	89	35.4	82	92	
25	"	04 + 00 - C	11.4	90	83½	38.8	79	94½	
26	9-10	02 + 60 - R39	13.0	95	83	34.8	70½	84½	FAILED

SUMMARY OF DENSITY TESTS
CONTROL OF COMPACTED FILL

JOB NO. 7577-011

OWNER INSCON DEVELOP. CO.

PAGE 2 of 4

JOB ENGR. WDW

TEST NO.	DATE 1970	TEST LOCATION ACCESS ROAD STATIONING	ELEV FT.	% COMP. REQ'D	MAX. DRY DENSITY P.C.F.	FILL MOISTURE %	TEST DRY DENSITY P.C.F.	% MAX. DRY DENSITY	REMARKS
27	9-10	08 + 33 - L10	12.1	95	92½	27.5	90	97½	
28	"	12 + 59 - L32	11.5	95	83	34.1	80½	96½	
29	9-11	03 + 26 - L12	13.2	90	83	55.0	63½	76½	RETEST 26 FAILED
30	9-14	03 + 50 - L30	13.1	90	83½	45.3	74½	89½	RETEST 29 FAILED
31	"	16 + 42 - L39	4.4	90	83½	58.2	69½	83	FAILED
32	"	16 + 00 - R42	5.4	90	83½	60.0	64	76½	FAILED
33	9-15	03 + 30 - R05	12.9	90	84	33.3	75½	90	RETEST 30
34	"	15 + 77 - R32	5.4	90	84	48.3	72½	86½	FAILED
35	"	08 + 03 - L12	13.3	95	84	40.0	81½	97	
36	"	14 + 65 - R12	8.5	90	84	45.8	70½	84½	FAILED
37	9-16	19 + 10 - R12	11.7	90	84	38.7	82	98	
38	"	25 + 00 - R30	13.0	95	84	37.1	81½	97½	
39	"	03 + 75 - C	15.3	95	84	46.0	77	91½	RETEST 33 FAILED
40	"	13 + 50 - L27	10.5	90	84	40.4	75½	90½	RETEST 36
41	"	26 + 00 - L28	14.5	95	84	42.4	72	86	ROADWAY A & B FAILED
42	9-17	16 + 47 - L18	7.3	90	84	42.4	79	94	
43	"	20 + 00 - L36	15.5	90	84	45.8	76	90	
44	"	23 + 45 - R30	10.5	90	84	43.0	78	93	
45	"	15 + 96 - R24	4.4	90	84	49.8	70	83	FAILED
46	"	16 + 54 - L17	6.8	90	84	41.3	77½	92	RETEST 45
47	"	15 + 85 - R05	5.8	90	84	50.9	69½	82½	FAILED
48	9-18	16 + 05 - R34	8.0	90	84	47.3	71	85	RETEST 47 FAILED
49	"	20 + 50 - L25	14.9	90	84	50.0	70½	84	FAILED
50	9-21	15 + 95 - R20	9.0	90	89	33.3	83½	93½	
51	"	01 + 35 - C	14.0	95	84	36.0	77½	92½	ROADWAY B FAILED
52	9-22	06 + 29 - R03	16.0	95	84	45.7	78½	93	FAILED

SUMMARY OF DENSITY TESTS
CONTROL OF COMPACTED FILL

JOB NO. 7577-011

OWNER INSCON DEVELOP. CO.

PAGE 3 of 4

JOB ENGR. WDW

TEST NO.	DATE 1970	TEST LOCATION ACCESS ROAD STATIONING	ELEV FT.	% COMP. REQ'D	MAX. DRY DENSITY P.C.F.	FILL MOISTURE %	TEST DRY DENSITY P.C.F.	% MAX. DRY DENSITY	REMARKS
53	9-22	22 + 23 - R25	14.5	95	89	31.4	85½	96	
54	"	17 + 60 - R01	13.4	90	84	39.8	73	87	FAILED
55	"	11 + 14 - L28	13.0	95	84	35.8	73½	87½	FAILED
56	9-28	17 + 80 - R27	16.0	95	89	37.9	89	100	
57	"	15 + 37 - R10	13.0	95	84	34.4	80	95½	
	1971								
58	6-1	20 + 10 - R26	8.0	95	132	4.8	122	92½	UNDER PASS B FILL FAILED
59	"	20 + 34 - L38	9.5	95	132	5.8	125	95	UNDER PASS BACKFILL
60	"	20 + 14 - L38	11.0	95	138	9.5	138	100	UNDER PASS B FILL RETEST 60
61	6-4	20 + 35 - R5	12.0	95	140	10.2	140	100	INSUFFICIENT FINES
62	"	20 + 15 - R13	13.0	95	132	10.6	124	94	UNDER PASS BACKFILL
63	6-7	20 + 36 - L3	15.0	95	138	5.7	138	100	INSUFFICIENT FINES
64	"	20 + 12 - L14	15.0	95	132	6.7	126	95½	UNDER PASS BACKFILL
65	6-8	20 + 32 - L10	16.0	95	132	7.0	125	95	UNDER PASS BACKFILL
66	6-9	20 + 10 - R6	16.5	95	132	5.2	123	93½	REROLLED UND PASS BACKFIL
67	"	20 + 35 - R22	16.5	95	132	5.4	123	93½	REROLLED UND PASS BACKFIL
68	6-14	20 + 08 - L3	17.5	95	132	6.3	123	93½	REROLLED UND PASS BACKFIL
69	6-24	20 + 34 - L30	18.0	95	132	4.5	132	100	REROLLED UND PASS BACKFIL
70	8-18	15 + 50 - L23	13.0	95	84	36.2	71½	85½	FAILED
71	"	15 + 50 - L26	13.0	95	84	33.0	80½	96	RETEST 70
72	8-20	15 + 38 - R30	13.0	95	84	37.4	74½	88½	FAILED
73	"	12 + 74 - R28	13.0	95	84	37.0	70½	84	FAILED
74	"	13 + 70 - L12	13.0	95	84	38.0	75½	90	FAILED
75	8-23	15 + 50 - R29	13.0	95	84	45.0	82	97½	RETEST 72
76	"	15 + 50 - L23	13.0	95	84	28.0	77	91½	FAILED
77	9-16	17 + 00 - R10	15.0	95	84	30.6	84½	100½	

JOB ENGR. WDW

Attachment 2

